WHAT IS CLAIMED IS:

1. A method for making a heat exchange catheter device, comprising the acts of:

disposing a multi-lumen catheter body in a connector manifold mold;

disposing plural connector tubes in the connector manifold mold;

interconnecting a respective lumen with a respective connector tube using a mandrel;

directing a plastic material into the connector manifold mold; and

removing the mandrels such that a respective channel is defined between each respective lumen and its connector tube.

2. The method of Claim 1, further comprising the act of engaging at least one heat exchange membrane with a distal segment of the catheter body.

3. The method of Claim 2, wherein the catheter body is made of urethane.

4. A method for treating a patient, comprising the acts of:

advancing a heat exchange catheter device into the patient; and

circulating coolant through the catheter device while preventing infusion of the coolant directly into the patient's bloodstream, the catheter device including a heat exchange region established by: one or more heat exchange membranes, or one or more hollow fibers, or one or more chamber-defining enclosures.

5. The method of Claim 4, further comprising the act of performing aneurysm surgery while the patient's temperature is below normal body temperature.

6. The method of Claim 4, further comprising the act of treating head trauma in the patient while the patient's temperature is below normal body temperature.

7. The method of Claim 4, further comprising the act of treating cardiac arrest in the patient while the patient's temperature is below normal body temperature.

8. The method of Claim 4, further comprising the act of performing minimally invasive heart surgery on the patient while the patient's temperature is below normal body temperature.

9. The method of Claim 4, further comprising the act of treating cardiac malady in the patient while the patient's temperature is below normal body temperature.

10. The method of Claim 4, further comprising the act of maintaining the temperature of a patient at or below normal body temperature, when the patient runs or attempts to run a fever.